Solution

(1) Colligative properties depends only on No. of solute particul.

(2) $\Delta T_b = K_b m i$

i = more, more B.P.

$i = 1$ for glucose, fructose, urea, Non Electrolytes.

$i > 1$ Dissociation KCl, $Al_2(SO_4)_3$

$i < 1$ Association — Dimer formation of RCOOH

(3) $KI + HgI_2 \longrightarrow K_2HgI_4$

$i = 2$ $\qquad i = 3$

is Wrong.

Balance the equation (Reaction)

$2KI + HgI_2 \longrightarrow K_2HgI_4$

for complex formation (2)

i decreases

$$\Delta T_f = K_f m i$$

i increases B.P. increases

i increases f.p. decreases. (more depression)

(*) in KI if HgI_2 is added then B.P. decreases but f.p. increases.

(4) Note - T_n Case of freezing $\Delta G = 0$ and eqlb. is between liquid $\rightleftharpoons$ solid (solvent) (solvent)

(5) Good antifeez is having low molecular weight

(4) In Case of osmosis only flow of solvent molecules (3) or particals is there. not Solute through semi Permable membrane (SPM)

(5)

$FeCl_3$ Soln	SPM	KOH Soln
0.01		0.0001

In this no. reaction between $FeCl_3$ & KOH

(6) $P = CRT i$

i may be calculated for acid

$$HCN \underset{a(1-\alpha)}{\overset{1-\alpha}{\rightleftharpoons}} \underset{a\alpha}{\overset{\alpha}{H^+}} + \underset{a\alpha}{CN^-}$$

$$\alpha = \sqrt{\frac{K_a}{a}} \qquad \boxed{i = 1 + \alpha}$$

(7) In Case of Lowering in V.P.

$$\frac{P^\circ - P}{P^\circ} = \frac{n_2}{n_1 + N}$$ (4)

i more $(P^\circ - P)$ more so P' less — Rember

(4) $P_T = P_A + P_B$

$P_T = X_A \cdot P_A^\circ + X_B \cdot P_B^\circ$

$X_A = 1$ means pure A so $X_B = 0$

$X_B = 1$ means pure B so $X_A = 0$.

Ex- $P_T = 100 + 80 X_B$

for benzene & toulene mixture

So for pure benzene $X_B = 1$

Pure $P_B^\circ = 100 + 80 = 180$

So for pure toulene ~~$X_B = 0$~~ $X_B = 0$

Pure $P_{toulene}^\circ = 100$